SOIL SURVEY

Plymouth County
Massachusetts

UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
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MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION
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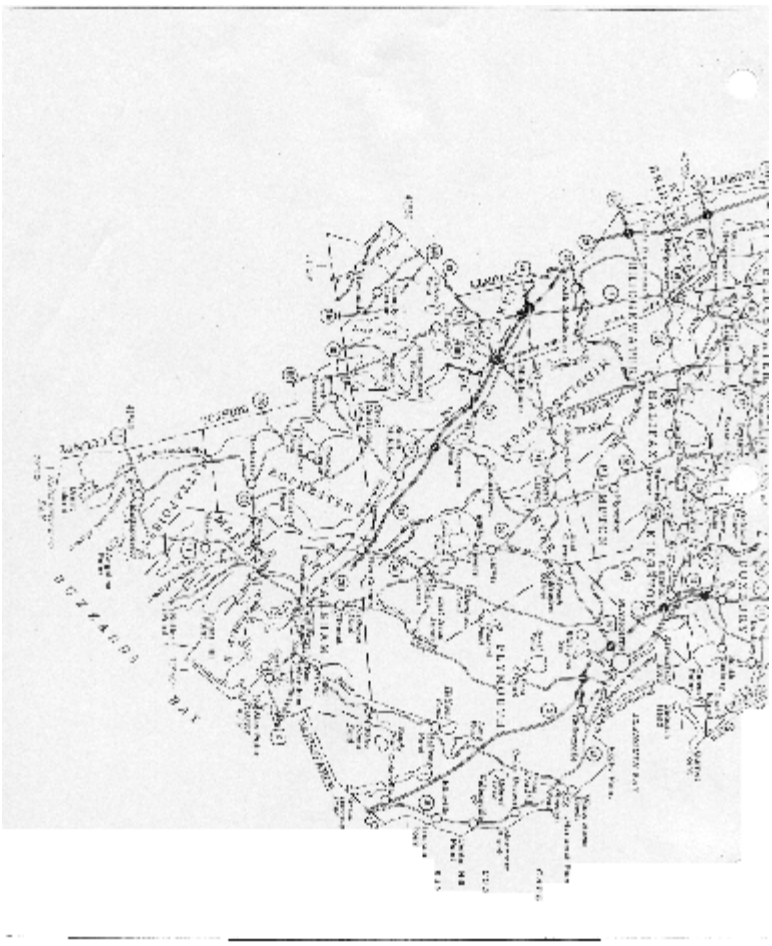

MERRIMAC SERIES

The Merrimac series consists of somewhat excessively drained and well-drained soils that formed in thick deposits of sand and gravel derived mainly from granite gneiss.

Typical profile of a Merrimac sandy loam (6 percent slope, wooded area on south side of Plymouth Street, about 50 yards east of the East Bridgewater town line in Halifax):

- 02-1 inch to 0, organic matter in advanced stage of decomposition.

- Al-0 to 1 inch, very dark gray (10YR 3/1) sandy loam; weak, fine, granular structure;
- very friable; many fine and coarse roots; extremely acid; abrupt, wavy boundary. 1-2 inches thick.

- B21- 1 to 12 inches, yellowish-brown (10 YR 5/6) sandy loam that becomes paler with

depth; weak fine, granular structure; very friable; many roots; 5 percent gravel; very strongly acid; clear, smooth boundary; 10 to12 inches thick.

- B22 – 12 to 23 inches, yellowish-brown (10 YR 5/8) sandy loam; weak, fine, granular structure; common roots; very friable; 5 percent grave; very strongly acid; abrupt boundary; 9 – 12 inches thick.

- 11133-23 to 31 inches, light yellowish-brown (2.5Y 6/4) gravelly loamy sand; single grain; loose; 15 to 20 percent gravel and cobblestones, 3 to 6 inches ill diameter; very strongly acid; abrupt, wavy boundary.

- IIC – 31 to 48 inches +, olive-brown (2.5Y 4/4) gravelly sand; single grain; loose; 40 percent subrounded granitic gravel and cobblestones, 3 to 6 inches in diameter; very strongly acid.

The solum ranges from 18 to 36 inches in thickness but in most places is about 30 inches thick. It is predominantly sandy loam and in some places is gravelly. It either has weak, fine granular structure or is structureless.

In the A1 horizon, the color has a hue of 10YR to 5YR, a value of 2 or 3, and a chroma of 1 or 2. The texture is commonly sandy loam but ranges to fine sandy loam. In places there is an A/2 horizon. In this horizon, the color is about the same in hue and chroma as that of the A1 horizon, but it has a value of 5 or 6. In the Ap horizon, the color has a hue of 10YR or 7.5YR. a value of 3, and a chroma of 3 or 4.

In the B21 horizon, the color ranges from 10YR to 7.5YR ill hue, has a value of 4 or 5, and ranges from 4 to 6 in chroma. In the lower part of the B horizon, the color is similar in hue to that of the B21 horizon, but it has a value of 5 or 6 and a chroma of 4 to 8.

In the IIC horizon. the color ranges from 10YR to 2.5Y in hue and from 4 to 6 in value and has a chroma of 2 or 4. In most places the IIC horizon is stratified sand, gravel, and cobblestones. It is single grain.

Merrimac soils are similar to Agawam, Hinckley, and Warwick soils. Agawam soils are underlain by sand but are free of gravel. Hinckley soils are similar in profile sequence but are loamy sand or sand. Warwick soils contain many phyllite fragments.

Merrimac soils are closely associated with the moderately well drained Deerfield soils, the poorly drained Au Gres and Wareham soils, and the very poorly drained Scarboro soils.

CARVER SERIES

The Carver series consists of deep, excessively drained, coarse-textured soils.

Typical profile of a Carver coarse sand (1 percent slope, wooded area 100 feet east of Tihonet Road and 1 mile north of junction with Route 28, in Wareham):

- 01-2 inches to 1 inch, partially decayed litter of pitch pine and
  - scrub oak.

- 02-1 inch to 0, very dark brown (10YR 212) organic matter. A 1-0 to 5 inches, black (N 210) coarse sand; very weak, medium, granular structure; very friable to loose; common

fine and coarse roots; 1 percent gravel; extremely acid; abrupt, wavy boundary. 4 to 6 inches thick.

- A2 – 5 to 7 inches, gray (10YR 511) coarse sand; single grain; loose; common, fine, Fibrous roots; 1 percent gravel; extremely acid; abrupt, wavy boundary. 2 to 3 inches thick.

- B21 – 7 to 12 inches, strong-brown (7.5YR 516) coarse sand; single grain; loose; common, fine, fibrous roots; 1 per- cent gravel; very strongly acid; clear, smooth boundary. 5 to 7 inches thick.

- R22 – 12 to 17 inches, yellowish-brown (10YR 516) coarse sand; single grain; loose; common fine and coarse roots; 2 percent gravel; very strongly acid; clear, smooth boundary. 4 to 5 inches thick.

- B23 – 17 to 22 inches, yellowish-brown (10YR 516) coarse sand; single grain; loose; common fine sand coarse roots; 2 percent gravel, *V2* to 1 inch in diameter; very strongly acid; clear, smooth boundary. 4 to 6 inches thick.

- B24 - 22 to 25 inches, yellowish-brown (10YR 516) coarse sand; single grain; loose; 3 to 4 percent gravel; few fine roots; very strongly acid; clear, smooth boundary. 3 to 4 inches thick.

- B3, 1-25 to 29 inches, brownish-yellow (10YR 616) coarse sand; single grain; loose; 3 percent very fine gravel; few roots; very strongly acid; clear, smooth boundary. 3 to 4 inches thick.

- C-29 to 50 inches, light yellowish-brown (2.5Y 614) coarse sand; single grain; loose; 3 percent very fine gravel; no roots; very strongly acid.

Typical profile of a Carver loamy coarse sand (nearly level idle area off Vaughn Street, in Middleboro):

- AP -O to 8 inches, dark-brown (10YR 413) loamy coarse sand; very weak, fine, granular structure (appears to be induced by mycelia); very friable to loose; many, fine, fibrous roots; abrupt, smooth boundary.

- B21-8 to 13 inches, strong-brown (7.5YR 516) loamy coarse sand and sandy loam; single grain; loose; clear, smooth boundary.

- B22-13 to 24 inches, yellowish-brown (10YR 518) loamy coarse sand; single grain; loose; many roots; clear, smooth boundary.

- B23 -24 to 29 inches yellowish-brown (lOYR 516) loamy coarse sand; single grain; loose; few large roots; gradual boundary.

- C- 29 to 41 inches, light yellowish-brown (2.5Y 614) coarse sand; single grain; loose; few large roots.

In most places structure is lacking throughout the profile, but in some places the A1 horizon has weak, fine, granular structure that appears to be induced by mycelia threads. The solum ranges from 24 to 32 inches in thickness. Some scattered pebbles occur throughout the soil material.

The surface horizon is commonly coarse sand, but in places it is loamy coarse sand. Typically, the A2 horizon is gray (10YR 511) or dark gray (10YR 4/1), but the color Ranges from 10 YR to 5 YR in hue, is from 3 to 6 in value, and is or 2 in chroma. The darker colors are the result of soil material being mixed with charcoal dust from the burning of the forest cover. Fragments of charcoal are also mixed with the soil material in the 02 and A1 horizons.

In the upper part of the B horizon, the color ranges from 7.5YR to 10YR in hue, has a value of 5, and ranges from 4 to 6 in chroma. The B horizon is coarse sand or loamy coarse sand.

In the C horizon, the color ranges from 7.5YR to 5Y in hue, has a value of 5 and ranges From 2 to 4 in chroma. The C horizon is typically coarse sand.

Carver soils resemble Deerfield, Hinckley, and 'Windsor soils, but Deerfield soils are lower in content of coarse sand and are mottled in the lower part of the B horizon; Hinckley soils have a gravelly solum and a very gravelly sub- stratum; and Windsor soils have a more strongly developed B horizon and are higher in content of fine sand.

ENFIELD SERIES

The Enfield series consists of well-drained soils that formed in very fine sand over stratified sand and gravel.

Typical profile of an Enfield very fine sandy loam (1 percent slope, hayfield on 'White Horse Road, about 100 yards north 1 0f intersection with Warren Avenue, in Plymouth):

- Ap -O to 8 inches, dark-brown (10YR 3/3) very fine sandy loam; weak, fine, granular structure; very friable; many roots; strongly acid; smooth boundary.
- B-21- 8 to 14 inches: dark yellowish-brown (10YR 4/4) very tine sandy loam; weak, fine, granular structure; very friable; many roots; strongly acid; clear, smooth boundary,
- 6 to 8 inches thick.
- B22-14 to 24 inches, light olive-brown (2.5Y 5/4) very fine sandy loam: massive; very friable; common roots; strongly acid; clear, smooth boundary. 10 to 12 inches thick.
- B23 – 24 to 30 inches, light yellowish-brown (l0YR 6/4) very fine sandy loam; massive; very friable; strongly acid; abrupt, wavy boundary.
- IIC- 30 to 44 inches +, pale-brown (10YR 6/3) gravelly coarse sand; loose; large amount of quartz particles and a few dark-colored minerals.

The solum ranges from 24 to 30 inches in thickness. Except for the Ap horizon in limed fields, the reaction ranges from strongly acid to very strongly acid.

The AP horizon is typically dark brown (10YR 3/3) but ranges to very dark grayish brown (10YR 3/2). It is commonly very fine sandy loam but ranges to loam. It has weak, fine, granular structure or is single grain.

In the upper part of the B horizon, the color ranges from 7.5YR to 2,5Y in hue, has a value of 4 or 5, and ranges from 3 to 6 in chroma. In the lower part, the hue is 10YR or 2.5Y, the value is 5 or 6, and the chroma ranges from 4 to 8. The B horizon is typically very fine sandy loam. The upper part has weak, fine, granular structure, and the lower part is generally massive. The soil material is coherent in place but has a tendency to break into clods if removed.

The IIC horizon ranges from sand to gravelly sand, it is single grain and loose.

Enfield soils are similar to Belgrade, Merrimac, and Tisbury soils. They differ from those soils mainly in that Belgrade soils have a silt loam solum and are underlain by silt and very fine sand;
Merrimac soils are coarser textured and have less pronounced textural change between the solum and substratum; and Tisbury soils are moderately well drained and are mottled in the lower part of the B horizon.

Enfield soils are closely associated with the loose, coarse-textured Carver soils. They formed in
an eolian mantle of very fine sand that was deposited over coarse sand, whereas the Carver soils formed in the coarse sand.

GLOUCESTER SERIES

The Gloucester series consists of somewhat excessively drained soils that formed in glacial till derived mainly from granite and gneiss. Typical profile of a Gloucester very stony loamy sand (15 percent slope, wooded area. about 50 feet east of Winter Street and 1,200 feet north of Cross Street, in Hingham):

- AI-O to /2 inch, dark-gray (10YR 4/1) very stony loamy sand; weak, fine, granular structure; very friable; many roots; 10 percent subangular fragments of rock; extremely acid; abrupt, smooth boundary. Stones on surface are generally from 20 to 80 feet apart.

- B21- ½ inch to 4 inches, dark yellowish-brown (10YR 4/4) loamy sand; very weak, fine, granular structure; very friable; many roots; 10 percent coarse fragments; very strongly acid; abrupt, wavy boundary. 3 to 5 inches thick.

- B22-4 to 14 inches, strong-brown (7.5YR 5/6) gravelly loamy sand; very weak, fine, granular structure; very friable; many roots; 20 percent coarse fragments; very strongly acid; clear, smooth boundary. 9 to 11 inches thick.

- B23-14 to 24 inches, brownish-yellow (10YR 616) gravelly loamy sand; single grain; loose; 20 percent coarse fragments; many roots; very strongly acid; clear, smooth boundary. 10 to 11 inches thick.

- C -24 to 40 inches, light-gray (10YR 7/2) gravelly loamy sand; single grain; loose; 25 percent subangular fragments of rock; common roots; very strongly acid.

In their natural state these soils are very stony or extremely stony, but in a few places they have been cleared of surface stones to facilitate tillage. They either have weak, granular structure or are single grain in the upper part of the solum, and they are single grain in the lower part of the solum and in the substratum. The solum ranges from 18 to 26 inches in thickness. In some areas, a firm layer occurs below a depth of 30 inches.

In the A1 horizon the hue is commonly 10YR but in places is 7.5YR. The color ranges from 2 to 4 in value and has a chroma of 1 or 2. The surface horizon is dominantly loamy sand but ranges to fine sandy loam. In places there is an A2 horizon. In this horizon, the color has a hue of 10YR or 2.5Y, generally has a value of 6, and has a chroma of 1 or 2.

In the B21 horizon, the color has a hue of 10YR or 7.5YR, a value of 3 or 4, and a chroma of 3 or 4. In the lower part of the B horizon, the color is similar in hue to that of the B21 horizon, but the value is 5 or 6, and the chroma is 4 to 8. The upper part of the B horizon

ranges from gravelly loamy coarse sand to coarse sandy loam. The lower part ranges from loamy sand to gravelly loamy coarse sand.

In the C horizon, the color has a hue of 10YR or 2.5Y, a value of 7, and a chroma of 1 to 4. The texture ranges from loamy sand to gravelly loamy coarse sand. In some areas the C horizon is loose and friable to a depth of 5 feet or more. In other areas it is firm at a depth of about 21/2 to 5 feet.

Gloucester soils are similar to Carver, Charlton, Essex, Hinckley, and Windsor soils. Carver soils are sands and loamy coarse sands but contain only a few coarse fragments; Charlton soils are similar in color but are finer textured; Essex soils have a frangipan; Hinckley soils formed in glaciofluvial sand and gravel and contain many subrounded fragments instead of subangular, coarse fragments; and Windsor soils formed in water-sorted sand and contain fewer coarse fragments.

HINCKLEY SERIES

The Hinckley series consists of excessively drained soils that formed in thick deposits of sand and gravel derived principally from granite and gneiss.

Typical profile of a Hinckley gravelly loamy sand (5 percent slope, in a formerly cultivated area south of Rockland Street, opposite intersection with Hanover Street, in Hanover):

- Ap-*O* to 7 inches, brown to dark-brown (lOYR 4/3*)* gravelly loamy sand; single grain; loose; many roots; 25 percent granitic gravel and cobblestones; very strongly acid; abrupt, smooth boundary.

- B21 - 7 to 13 inches, yellowish-brown (10YR 5/G) gravelly loamy sand; single grain; loose; few roots; 25 percent gravel and cobblestones; very strongly acid; clear, smooth boundary.

- B22- 13 to 19 inches, light yellowish-brown (10Ylt G/4) gravelly loamy sand; single grain; loose; few roots; 25 percent coarse fragments; very strongly acid; gradual, smooth boundary.

- IIC1 – 19 to 24 inches; very pale brown (lOYR 7/4) very gravelly coarse sand; single grain; loose; no roots; 50 percent coarse fragments; very strongly acid; gradual, smooth boundary.

- IIC2 – 24 to 40 inches +, light-gray (10 YR 7/2) stratified coarse sand, gravel, and some cobblestones: single grain; loose; no roots; more than 50% coarse fragments; very strongly acid.

Some surface horizons have weak, granular structure, but generally all horizons are single grain. The substratum is typically stratified sand and gravel, although there are cobblestones in many places.

In the AP horizon, the color has a hue of 10YR or 7.5YR, a value of 3 or 4, and a chroma of 3. The A1 horizon ranges from black (N 2/0) to very dark brown (10 YR 2/2). The surface horizon is generally gravelly loamy sand. In places there is an A2 horizon. In this horizon, the- color ranges from 5YR to 10YR ill hue and from 4 to 6 in value. It has a chroma of 1 or'2.

In the B21 horizon, the color has a hue of 7.5YR or 10YR, a value of 4 or 5, and a chroma of 4 or 6. In hue, the B22 horizon is similar to the B21 horizon, but generally it has a value

of 6 and a chroma of 4 to 8. The B horizon is commonly gravelly loamy sand, but the B21 horizon ranges to gravelly fine sandy loam.

In the C horizon, tile color commonly has a hue of 10YR, a value of 6 or 7, and a chroma of 2 to 4. Structure is lacking.

Hinckley soils are similar to Quonset, Merrimac, Warwick, and Windsor soils. They differ from those soils mainly in that Quonset soils contain many fine fragments of dark-colored phyllite; Merrimac soils are finer textured and are less gravelly in the surface horizon and upper part of the B horizon; Warwick soils have a fine sandy loam solum and contain many fragments of phyllite; and 'Windsor soils are similar in texture to Hinckley soils but contain little gravel.

Hinckley soils are the excessively drained members of a drainage sequence that includes the moderately well drained Deerfield soils, the poorly drained Au Gres and Wareham soils, and the very poorly drained Scarboro soils.

WINDSOR SERIES

The Windsor series consists of excessively drained soils that formed in thick deposits of sand.

Typical profile of a Windsor loamy sand (level area, idle field on Titicut archeological site, off Beach Street, in Bridgewater):

- Ap - 0 to 9 inches, dark-brown (10YR 3/3) loamy sand; single grain; loose; many fine roots; abrupt, smooth boundary.
- B21-9 to 12 inches, strong-brown (7.5YR 5/6) loamy fine sand; single grain; loose; common roots; clear, smooth boundary.
- B22-12 to 20 inches, light yellowish-brown (10YR 6/4) sand; single grain; loose; few pebbles; clear, smooth boundary.
- B23- 20 to 31inches, pale-yellow (2.5Y 7/4) coarse sand; single grain; loose; scattered pebbles; clear, smooth boundary.
- C -3l to 41 inches, light-gray (2.5Y 7/2) and light olive-gray (5Y 6/2) sand; single grain; loose; few pebbles.

The solum ranges from 24 to 32 inches in thickness. In some places the surface horizon Has weak, crumb structure, but generally these soils are single grain and loose. The solum And substratum contain a few pebbles, and in places there are strata of gravel below a depth of 42 inches. Most of the acreage has been tilled, although at the present time this acreage is forested.

In the AP horizon, the color commonly has a hue of lOYR and a value and chroma of 3 or 4. The surface horizon is loamy sand or loamy fine sand.

In the B2l horizon, the color has a hue of 10YR or 7.5YR, a value of 4 or 5, and a chroma of 4 to 8. In the lower part of the B horizon, the color has a hue of 10YR or 2.5Y, a value of 5 to 7, and generally a chroma of 4. The B horizon ranges from sand to loamy fine sand.

In the C horizon, the color ranges from 10YR to 5Y in hue, from 6 to 7in value, and from 2 to 6 in chroma.

Windsor soils are similar to Agawam, Carver, and Hinckley soils. They differ from those soils mainly in that Agawam soils have a finer textured solum; Carver soils are coarser textured and are higher in content of coarse quartz particles; and Hinckley soils have a gravelly solum and a very gravelly substratum.

Windsor soils are the excessively drained members of a drainage sequence that includes the moderately well drained Deerfield soils, the poorly drained Au Gres and Wareham soils, and the very poorly drained Scarboro soils.